Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Missile Defense Agency										DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*				R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*							
COST ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	389.259	222.075	347.012	-	347.012	327.342	362.520	341.780	326.095	Continuing	Continuing
MD11: *BMDS Radars*	374.436	211.682	257.656	-	257.656	225.300	240.853	248.890	225.505	Continuing	Continuing
MT11: *BMDS Radars Test*	-	-	72.388	-	72.388	85.892	103.909	76.015	84.058	Continuing	Continuing
MD40: *Program-Wide Support*	14.823	10.393	16.968	-	16.968	16.150	17.758	16.875	16.532	Continuing	Continuing

Note

N/A

A. Mission Description and Budget Item Justification

The BMDS network of layered Sensors provide essential situational awareness and fire control data for the command and control of BMDS weapon systems, such as Ground-based Midcourse Defense (GMD), Aegis Ballistic Missile Defense, and Terminal High Altitude Area Defense (THAAD). The suite of remote ground-based sensors provide early warning, midcourse and terminal ballistic missile defense threat data enabling layered detection and tracking of ballistic missile targets, providing fire-control quality position, velocity, and discrimination data through Command and Control, Battle Management, Communications (C2BMC).

Overlapping sensor coverage of geographically diverse sensors provides improved threat track data as well as reducing the loss of any one sensor and reducing the potential impact of countermeasures. The extended coverage and accuracy provided by a network of layered sensors increases the defensive footprint and reduces the number of target engagements required, thereby conserving interceptor inventory and ensuring a high probability of successful engagement. Networked forward-based sensors enables C2BMC to pair the best sensor coverage with the best available weapon system to provide the most effective defense against ballistic missile threats.

The BMD Sensors Program contributes to regional missile defense through the following activities:

-Development, delivery and deployment of remote, forward based Army Navy/Transportable Radar Surveillance and Control (AN/TPY-2) radars to provide early warning, track, and discrimination data through all phases of ballistic missile flight. Through the BMDS C2BMC and coalition datalinks, the AN/TPY-2 provides fire control data to enable remote SM-3 engagements by Aegis BMD, to allow earlier engagement by the Arrow Weapon System, and to cue deployed THAAD and U.S. and partner Patriot batteries.

The operation and sustainment of AN/TPY-2 software is maintained across the fleet of AN/TPY-2 radars, to include radars in Japan, Israel, and Turkey. Lessons learned from each radar are addressed in new software builds that are developed, tested, and subsequently installed at each radar.

AN/TPY-2 radars can be configured to operate either as a THAAD Fire Unit Radar (terminal mode) or Forward-Based Radar. These radars are transportable, adding flexibility to respond to geographical changes in threats. Under this Program Element, seven AN/TPY-2 radars have completed manufacturing. The AN/TPY-2 used in a forward-based role provides detection and tracking during the boost phase. This significantly reduces the uncertainty in target discrimination and reaction time,

increasing the probability of a successful BMDS engagement. In forward-based mode, the AN/TPY-2 also provides acquisition and track data via the Ballistic Missile Defense System Command, Control, Battle Management and Communications (C2BMC) and Link 16 to the Aegis missile defense system for cueing. The AN/TPY-2 used in terminal mode is an integral component of the THAAD Battery. The THAAD battery radar is capable of tracking multiple threats and multiple interceptors during engagements in the terminal phase. It provides surveillance, acquisition, track, discrimination, interceptor communications, and hit assessment data collection for the fire control. The current and planned utilization of the AN/TPY-2 radars supports GMD, THAAD, and the Aegis Weapon System via C2BMC.

The BMDS network of sensors also includes the Cobra Dane Radar at Eareckson Air Force Station in Alaska, Upgraded Early Warning Radars at Beale Air Force Base, Fylingdales RAF Station, UK, and at Thule Air Force Station in Greenland.

These Ultra High Frequency (UHF) Early Warning Radars have been upgraded to include missile defense functionality. This capability expands defense of the U.S. to include defense against limited long-range threats.

The Clear EWR located at Clear Air Force Station, AK, is also being upgraded to include missile defense functionality. Upgrade activities will begin in FY 2012 and be completed in FY 2016. The addition of the Clear UEWR into the BMDS sensor architecture will improve BMDS sensor coverage and provide new engagement options against long-range missile threats and reduce reliance on the Cobra Dane asset.

The BMDS Sensors Program also contributes to the testing and proving of the U.S. missile defense systems through the following activities:

-Participation in BMDS flight and ground test campaigns
-Modeling and simulation efforts to include: enhanced sensor models, development of radio frequency (RF) scene generators, integration of digital simulations into the BMDS modeling and simulation architecture, and verification, validation, and accreditation (VV&A) of radar models.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	454.859	222.374	357.271	-	357.271
Current President's Budget	389.259	222.075	347.012	-	347.012
Total Adjustments	-65.600	-0.299	-10.259	-	-10.259
• Congressional General Reductions	-2.660	-0.299			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-62.700	-			
• Reprogrammings	1.044	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustment	-1.284	-	-10.259	-	-10.259

Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Missile Defense Agency	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*

Change Summary Explanation

The FY 2011 decrease of $65.600M .reflects a congressional reduction (Department of Defense and Full Year Continuing Appropriation Act, Public Law 112-10) and a congressional transfer of funds to MDA Test and Targets Program Elements 0603888C

The FY 2012 decrease of $0.299M reflects a congressional reduction (Consolidated Appropriation Act of FY 2012 (Public Law 112-74)).

The FY 2013 reduction of $10.259M reflects a realignment of Department of Defense priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MD11: *BMDS Radars*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
MD11: *BMDS Radars*	374.436	211.682	257.656	-	257.656	225.300	240.853	248.890	225.505	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0		0	0	0	0	0		

Note

N/A

A. Mission Description and Budget Item Justification

Activities in this project include:
-Development of future AN/TPY-2 and UEWR radars capabilities
-Development of radar discrimination advanced algorithms for X-Band radars and selectable X-Band software for AN/TPY-2 radars to address evolving threats
-System engineering, software development, and testing support for X-Band, Cobra Dane, and UEWR sensors
-Modeling and simulation efforts to include: enhanced sensor models, development of RF scene generators, integration of digital simulations into the BMDS modeling and simulation architecture, and VV&A of radar models
-Participation in BMDS flight and ground test campaigns

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Title: UEWR (Beale, Fylingdales, Thule) & COBRA DANE Sustainment/Upgrades	20.253	-	-
Articles:	0	0	0
Description: See Description Below			
FY 2011 Accomplishments: -Continued UEWR/CD Common Mission software sustainment -Provided for program management office support personnel			
FY 2012 Plans: FY 2012 ($15.600M) UEWR and Cobra Dane software sustainment transitioned to O&M. Funding for UEWR/CD program office ($6.655M) support is found under the Sensors Directorate Operations accomplishment paragraph below.			
FY 2013 Plans: -Execute emerging software upgrades to UEWR`s			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency		DATE: February 2012
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
FY 2013 ($13.400M) UEWR and Cobra Dane software sustainment transitioned to O&M. Funding for UEWR/CD program office support ($3.375M) is found under the Sensors Directorate Operations accomplishment paragraph below.			
Title: X-Band Basic Program	59.632	12.847	29.725
Articles:	0	0	0
Description: See Description Below ***FY 2011 Accomplishments:*** -Completed Verification and Validation of the first selectable software build (CX-1) -Initiated development of the next generation processor replacing superdome units in AN/TPY-2 radars -Supported the THAAD Reliability Confidence Test (RCT) which demonstrated an established reliability growth curve by conducting a 200-hour plus endurance test to support a THAAD Conditional Materiel Release ***FY 2012 Plans:*** -Continue development of the Advanced Processor Platform (Superdome Obsolescence Program) -Continue development of selectable X-Band software builds ***FY 2013 Plans:*** -Continue Material Release Closure Plan for AN/TPY-2, including a Forward Based Mode (FBM) Material Release Reliability, Availability, and Maintainability (RAM) Get Well plan to promote reliability growth in the suite of AN/TPY-2 radars via incorporation of retrofit change notices -Support the Superdome Obsolescence program, including reliability enhancements to the AN/TPY-2 Signal Processor -Support RAM Scoring Conferences to validate radar reliability growth -Initiate Debris Mitigation Development activities required to meet BMDS System Spec Threat Requirements (D2 and D3) and provide enhanced Warfighter capability in complex tactical environments -Conduct Threat Compliance Development activities required to meet BMDS System Spec Threat Requirements (D2 and D3 Threats) -Initiate Enhanced Calibration Unit (ECU) Program development			
Title: BMDS Radars (Sustainment)	118.082	-	-
Articles:	0	0	0
Description: See Description Below ***FY 2011 Accomplishments:*** -Operated and sustained 7 AN/TPY-2 radars: three (3) forward-based radars (OCONUS), two (2) THAAD battery radars (US), one (1) AN/TPY-2 test asset (PMRF), and refurbishment of one AN/TPY-2			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MD11: *BMDS Radars*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
-Provided depot level logistics support for seven AN/TPY-2 radars supporting BMDS forward Based Radar Sites and THAAD Batteries -Operated and sustained radar during integration testing at Vandenberg Air Force Base (VAFB), White Sands Missile Range (WSMR), and Pacific Missile Range Facility (PMRF) or Reagan Test Site (RTS) -Provided AN/TPY-2 operational spares, repair, and replacement parts -Provided AN/TPY-2 Forward-based Radar operators/maintainers, site maintenance, fuel, utility, and communications support costs -Operated and sustained the Ground-based Radar - Prototype (GBR-P) in caretaker status -Completed AN/TPY-2 Transition and Transfer Annex -Achieved Material Release of AN/TPY-2 to lead service -- Army -Refurbished AN/TPY-2 Radar #4 -Demonstrated X-Band resolution of FTG-06 problems in FTG-06A ***FY 2012 Plans:*** For FY 2012, operations and sustainment Contractor Logistical Support (CLS) of the AN/TPY-2 radars moves to O&M appropriation ***FY 2013 Plans:*** For FY 2013, operations and sustainment (CLS) of the AN/TPY-2 radars is funded with O&M appropriation.			
Title: BMDS Level Testing	35.777	48.640	-
Articles:	0	0	0
Description: See Description Below ***FY 2011 Accomplishments:*** -Planned and executed sensors participation in BMDS flight tests, including GMD Intercept Flight Test FTG-06a and Aegis flight test FTM-15, the first test to demonstrate Phased Adaptive Approach capabilities -Continued to plan and execute sensors participation in BMDS ground test campaign GT-04 (includes support to hardware-in-the-loop (HWIL) and Distributed testing for EPAA deployment) -Planned and executed HWIL #1 in support of the CENTCOM deployment -Continued to plan for testing in support of the EPAA and CENTCOM deployments -Initiated planning for sensors participation in FY 2012 BMDS flight tests and ground tests ***FY 2012 Plans:*** -Plan and execute sensors participation in BMDS flight tests IAW the BMDS Integrated Master Test Plan -Plan and execute sensors participation in BMDS ground test campaign in accordance with the BMDS IMTP			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MD11: *BMDS Radars*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
-Plan and execute AN/TPY-2 support for THAAD flight tests in FY 2012 (previously funded in BMD Terminal Defense PE 0603881C). -Initiate planning for sensors participation in FY 2013 BMDS flight tests and ground tests ***FY 2013 Plans:*** Plans for FY 2013 are described in Budget Project MT11.			
Title: BMDS Radars Concurrent Test, Training & Operations (CTTO) Infrastructure	5.482	-	-
Articles:	0	0	0
Description: See Description Below ***FY 2011 Accomplishments:*** -Refined AN/TPY-2 and UEWR Single Stimulation Framework (SSF) interfaces to support BMDS ground test campaigns -Continued delivery of X-Band Simulator Test (XST) simulation model based on Radar Digital Signal Injection System (RDSIS) to provide hardware-in-the-loop (HWIL) service that will interface with the SBX and X-Band family of radars and provide more accurate debris modeling -Delivered UEWR CTTO capabilities at Beale, Thule, and Fylingdales in support of GTD-04b -Completed delivery of a COBRA DANE CTTO implementation design -Initiated upgrades of MDA test labs to implement the CTTO design ***FY 2012 Plans:*** This effort has been transferred to the C2BMC program element 0603896C Budget Project MD01. ***FY 2013 Plans:*** This effort has been transferred to the C2BMC program element 0603896C Budget Project MD01.			
Title: BMDS Radars Modeling & Simulation (M&S)	10.299	4.900	16.190
Articles:	0	0	0
Description: See Description Below ***FY 2011 Accomplishments:*** -Completed V&V report and Certification Letter for the Common Software Simulation (CXSIM) v1.0 supporting AN/TPY-2 CX1.2 -Continued development of digital simulation of first generation common software for AN/TPY2 CXSIM (CX1.3) for participation in Technical Assessment 04 and Performance Assessment 04 (TA04/PA04) Event -Completed development of XST simulation model based on RDSIS to provide the diffuse cloud model and simple antenna motion -Completed V&V report and Certification Letter for the RDSIS supporting AN/TPY-2 CX1			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency		DATE: February 2012
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
-Completed development of the Open Systems Architecture Sensor Models (OSM) with a focus on OSM-S version representing tactical software version SBX 3.1 -Supported TA04 and PA04 planning, integration, risk reduction testing, and event execution, using OSM to represent SBX, CDU, and UEWR sensors and CXSIM representing AN/TPY2 -Maintained digital and HWIL representations of the tactical versions of AN/TPY2 (CX1.3), SBX 3.1, UEWR 8.2.3, and CDU 2.6.6 and continued enhancements of these sensor models as required through application of critical engagement conditions and empirical measurement events (CEC/EMEs) ***FY 2012 Plans:*** -Continue to support Technical Assessments and Performance Assessments using OSM -Continue to maintain digital and HWIL representations of the tactical versions of AN/TPY2 (CX1.3), SBX 3.1, UEWR 8.2.3, and CDU 2.6.6 and CEC/EME implementation ***FY 2013 Plans:*** -Continue to support Technical Assessments and Performance Assessments, using Open Systems Architecture Sensor Models (OSM) and other models/tools, as appropriate -Continue to maintain digital and HWIL representations of the tactical versions of AN/TPY2 (CX1.3), SBX 3.1, UEWR 8.0.3, and CDU 2.6.7 and Critical Engagement Condition and Empirical Measurement Event implementation -Continue to fund and support all UEWR software updates tests in the HWIL simulations in Huntsville -Continue development of digital simulations of first generation common software and OSM models deferred from FY 2012			
Title: Sensors Engineering	10.896	1.050	26.366
Articles:	0	0	0
Description: See Description Below ***FY 2011 Accomplishments:*** -Conducted Certification and Accreditation for all Sensors systems -Implemented DoD 8500 Information Assurance (IA) Policy/ Guidance -Conducted Information Assurance/Computer Network Defense (IA/CND) Engineering Requirements Development and Architecture Integration -Supported Bi-Annual Information Assurance testing for vulnerabilities and Third Party Information Assurance assessments of the systems ***FY 2012 Plans:*** Continue to conduct IA certification and accreditation of all Sensors systems			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency		DATE: February 2012
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Continue to conduct engineering trade studies for sensor registration, discrimination, system track, battle management and other system functions ***FY 2013 Plans:*** -Continue to conduct IA certification and accreditation of all sensors systems -Support Bi-Annual Information Assurance (IA) testing for vulnerabilities and Third Party IA assessment of the systems -Provide debris mitigation and threat compliance engineering support to enable compliance with BMDS System Spec Threat Requirements -Provide Counter-countermeasures (CCM) Program Development engineering support			
Title: External Sensors ***Articles:*** ***Description:*** See Description Below ***FY 2011 Accomplishments:*** -Initiated integration of GEO1 and Third Generation Infrared Sensor (3GIRS) data sources into ESL Baseline Release (EBR) software. The launch schedules for the GEO1 Air Force asset and 3GIRS commercial asset are such that on-orbit checkout will not be finished in time to support completing the EBR in FY 2011 -Demonstrated new Overhead Persistent Infrared (OPIR) sensor capabilities for cueing radar and ABIR assets -Conducted flight tests and hardware in the loop demonstrations of Airborne Infra-red (ABIR), OPIR, and Space Tracking and Surveillance System (STSS) data fusion -Developed, installed and demonstrated ESL capabilities on new Linux-based hardware ***FY 2012 Plans:*** Funds ($17.560M) and plans are described in Advanced Technology PE 0603175C Budget Project MD25. ***FY 2013 Plans:*** Funds ($18.087M) and plans are described in Advanced Technology PE 0603175C Budget Project MD25.	18.598 0	- 0	- 0
Title: AN/TPY-2 C2BMC Fielding ***Articles:*** ***Description:*** See Description Below ***FY 2011 Accomplishments:*** -Procured and prepared Command and Control, Battle Management, and Communications (C2BMC) Deployable Interface Node (CDIN) #3 in support of FY 2012 deployment of PAA Phase I AN/TPY-2 Radar (EUCOM)	12.383 0	- 0	- 0

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency		DATE: February 2012
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
-Supported Operational Mission Planning (OMP) development and testing for EUCOM PAA deployment in FY 2012 -Completed the development of the Protected Anti-Jam/Anti-Scintillation Net-Centric System (PAAWNS) -Transported and installed the first Modernization of Enterprise Terminal (MET) to EUCOM -Integrated and certified BMDS Communications Systems -Supported exercises and tests of the AN/TPY-2 radar system with the BMDS Communications Networks (BCN) support systems (HBCN and CDIN) -Continued upgrades to support BCN at the teleports in the EUCOM and CENTCOM AOR`s; Lago Patria, and Ramstein ***FY 2012 Plans:*** Funds ($13.175M) and plans are described in the BMD C2BMC PE 0603896C, Project MX01 (Command and Control, Battle Management, Communications Development Support) ***FY 2013 Plans:*** Funds and plans are described in the BMD C2BMC PE 0603896C, Project MX01 (Command and Control, Battle Management, Communications Development Support)			
Title: BMDS Radars Communications (Sustainment) ***Articles:*** ***Description:*** See Description Below ***FY 2011 Accomplishments:*** For FY 2011, this program plans to: -Continue round-the-clock sustainment for Communications capabilities associated with AN/TPY-2 -Continue on-site C2BMC support of fielded sites for hardware and software -Continue C2BMC operator training for fielded capabilities -Continue sustaining engineering support and integrated logistics support for fielded hardware and software ***FY 2012 Plans:*** Funds ($13.988M) and plans are described in the BMD C2BMC PE 0603896C, Project MX01 (Command and Control, Battle Management, Communications Development Support) ***FY 2013 Plans:*** Funds and plans are described in the BMD C2BMC PE 0603896C, Project MX01 (Command and Control, Battle Management, Communications Development Support)	9.918 0	- 0	- 0
Title: Sensors Directorate Operations ***Articles:***	55.373 0	54.977 0	62.068 0

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency		DATE: February 2012
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Description: See Description Below ***FY 2011 Accomplishments:*** Provided Program Management Support across all BMDS Builds, including Concept Development. ***FY 2012 Plans:*** This effort will continue to provide operations support as described for FY 2011, but at reduced costs due to efficiencies from in-sourcing and implementation of a new Missile Defense Agency support services contract. ***FY 2013 Plans:*** This effort will continue to provide program management as described for FY 2012, with the exception of funding for UEWR program office support ($3.400M), which transitions to O&M.			
Title: Element Test and Infrastructure	15.853	15.198	-
Articles:	0	0	0
Description: See Description Below ***FY 2011 Accomplishments:*** -Initiated element-level ground test campaign SNG-22-S to collect satellite data to support anchoring M&S for various CEC/EMEs -Upgraded sensor interfaces to support Single Stimulation Framework (SSF) integration -Supported evolving SSF (software upgrades) integration into Sensors HWIL Ground Test Infrastructure -Configured and maintained Sensors HWIL Ground Test Infrastructure to support BMDS Ground Tests ***FY 2012 Plans:*** For FY 2012, Sensors planned testing includes: -Plan and execute sensors participation in flight tests for additional data collection opportunities to support development progress -Execute element-level ground test campaign to support anchoring M&S for various CEC/EMEs -Support evolving SSF (software upgrades) integration into HWIL Ground Test Infrastructure -Configure and maintain Sensors HWIL Ground Test Infrastructure to support BMDS Ground Tests ***FY 2013 Plans:*** Plans for FY 2013 are described in Budget Project MT11, BMDS Radars Test.			
Title: Upgrade Clear Early Warning Radar	-	28.275	91.663
Articles:	0	0	0
Description: See Description Below			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
FY 2011 Accomplishments: NA ***FY 2012 Plans:*** -Support engineering for BMDS Communications work at Clear -Purchase Long Lead fiber and SATCOM to support BMDS Communications -Support design and implementation of GCN connectivity and associated Network monitoring for integration into the GMD -Purchase Long Lead UEWR equipment --commercial-off-the-shelf (COTS) items and the UEWR receiver/exciter (REX) -Complete refinement of design, culminating with critical design review (CDR) ***FY 2013 Plans:*** -Complete refinement of design, culminating with critical design review (CDR) for hardware and software. -Purchasing and manufacturing of Long Lead UEWR equipment, such as commercial-off-the-shelf (COTS) items and the UEWR receiver/exciter (REX) -Creation of software and adapting it to UEWR infrastructure -Continue facility design and work -Continue work related to fiber and SATCOM to support BMDS communications and architecture -Upgrade UEWR Huntsville System Test Lab			
Title: AN/TPY-2 Radar Deployment / Site Activation	1.890	17.793	-
Articles:	0	0	0
Description: See Description Below ***FY 2011 Accomplishments:*** N/A ***FY 2012 Plans:*** -Package and ship AN/TPY-2 Radar #4 to forward-based radar site -Complete site survey, preparation and activation, including preparation of radar and communications equipment for deployment -Complete installation and deployment activities: radar installation, power installation, fuel tank installation -Complete CLS training of operators and maintainers ***FY 2013 Plans:*** -No planned deployments in FY 2013.			
Title: Project Oak	-	28.002	31.644
Articles:	0	0	0

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Description: See Description Below ***FY 2011 Accomplishments:*** N/A ***FY 2012 Plans:*** Project Oak details are at a higher classification. This project is reported in accordance with Title 10, United States Code, Section 19 (a)(1) in the Special Access Program Annual Report to Congress. ***FY 2013 Plans:*** Project Oak details are at a higher classification. This project is reported in accordance with Title 10, United States Code, Section 19 (a)(1) in the Special Access Program Annual Report to Congress.			
Accomplishments/Planned Programs Subtotals	374.436	211.682	257.656

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0603881C: *Ballistic Missile Defense Terminal Defense Segment*	420.839	290.076	316.929		316.929	313.212	338.353	249.475	279.758	Continuing	Continuing
• 0603882C: *Ballistic Missile Defense Midcourse Defense Segment*	1,245.489	1,159.456	903.172		903.172	914.603	954.069	948.650	862.884	Continuing	Continuing
• 0603888C: *Ballistic Missile Defense Test & Targets*	999.068	85.569	0.000		0.000	0.000	0.000	0.000	0.000	0.000	1,084.637
• 0603890C: *BMD Enabling Programs*	401.113	415.048	362.711		362.711	339.197	373.346	395.350	394.085	Continuing	Continuing
• 0603891C: *Special Programs - MDA*	228.450	296.145	272.387		272.387	321.450	345.263	354.503	348.602	Continuing	Continuing
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	454.440	363.640	366.552		366.552	376.116	383.055	358.431	364.725	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MD11: *BMDS Radars*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0603898C: *Ballistic Missile Defense Joint Warfighter Support*	55.351	41.174	55.550		55.550	53.139	53.718	59.291	60.540	Continuing	Continuing
• 0603904C: *Missile Defense Integration & Operations Center (MDIOC)*	83.112	69.249	63.043		63.043	54.299	55.409	54.693	55.844	Continuing	Continuing
• 0603907C: *Sea Based X-Band Radar (SBX)*	151.032	176.831	9.730		9.730	9.725	9.739	9.725	9.728	Continuing	Continuing
• 0603914C: *Ballistic Missile Defense Test*	0.000	487.699	454.400		454.400	420.357	446.542	373.395	421.632	Continuing	Continuing

D. Acquisition Strategy

The Consolidated - Contractor Logistics Support (C-CLS) contract was awarded in FY 2008 to operate and maintain the AN/TPY-2 radars and provide logistical support for other radars in the BMDS Radars PE. The C-CLS contract provides the operations and support activities required for site surveys, planning, relocation, depot maintenance, forward-based system operations, repair, and replacement. The contract is an Indefinite Delivery/Indefinite Quantity (IDIQ) task order contract.

The BMDS radar (AN/TPY-2, Forward-Based) project used an existing radar design to minimize development costs and schedule. Design enhancements focus on software changes for the forward based algorithms and C2BMC connectivity.

MDA will conduct a full and open competition for the Clear EWR Upgrade. The Agency intends to issue a Request for Proposal (RFP) on this effort in1QCY12 with award expected in 3QCY12.

The BMDS Communications System Complex-Transportable (BCSC-T) Program Plan addresses the design, development, acquisition, testing, integration, activation, and fielding of the BCSC-T. The overall executing agent is the Program Manager - Communications and Transmission Systems (PMDCATS). Lockheed Martin Mission Systems (C2BMC prime contractor) via an Other Transaction Agreement provides on-site support.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Missile Defense Agency			DATE: February 2012
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
X-Band Basic Program X-Band Software Enhancements/Development	SS/CPAF	Raytheon :AL	147.676	10.917	Oct 2011	21.559	Nov 2012	-		21.559	0.000	180.152	65.363
X-Band Basic Program Wildcat Software Development	SS/CPAF	Raytheon :MA	12.000	-		-		-		-	0.000	12.000	12.000
X-Band Basic Program Radar Discrimination Capability Common Advanced Algorithm Insertion (Budg Proj CX11)	C/CPAF	Raytheon AL:Boeing AL	11.658	-		-		-		-	0.000	11.658	12.447
X-Band Basic Program Discrete Event Simulation (DESIM) Phase 2&3 Spt to TA10, SW mod for SRR	SS/CPAF	Boeing :AL	8.583	-		-		-		-	0.000	8.583	8.583
X-Band Basic Program Discrete Event Simulation (DESIM) Phase 2&3, Open Systems Architecture (OSA) Sensor model	SS/CPAF	NG:AL	9.362	-		-		-		-	0.000	9.362	9.362
X-Band Basic Program TPY-2 Radar Field Upgrade (RAFU) Kit Install, Production readiness	SS/CPAF	LM, RDEC:AL	0.697	-		-		-		-	0.000	0.697	0.697
X-Band Basic Program Army Hybrid Program Office	MIPR	SMDC:AL	-	1.930	Oct 2011	0.963	Nov 2012	-		0.963	Continuing	Continuing	Continuing
X-Band Basic Program Counter-Countermeasure (CCM) Program	SS/CPAF	Raytheon:MA	-	-		-	Nov 2012	-		-	26.000	26.000	47.600
X-Band Basic Program Intercept Debris Mitigation	SS/CPAF	Raytheon:MA	-	-		0.303	Nov 2012	-		0.303	6.700	7.003	8.900
X-Band Basic Program Ground Based Radar Prototype (GBR-P) Caretaker	MIPR	SMDC:AL	-	-		-		-		-	Continuing	Continuing	Continuing

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
X-Band Basic Program Superdome Obsolescence	SS/CPAF	Raytheon:MA	-	-		4.300	Nov 2012	-		4.300	0.000	4.300	4.300
X-Band Basic Program Material Release Get Well Plan	SS/CPAF	Raytheon:MA	-	-		2.600	Nov 2012	-		2.600	0.500	3.100	3.100
BMDS Radars Modeling & Simulation (M&S) M&S Development	SS/CPAF	Raytheon:MA	12.213	2.650	Nov 2011	12.781	Nov 2012	-		12.781	84.181	111.825	99.466
BMDS Radars Modeling & Simulation (M&S) VV&A of Models	SS/CPAF	Raytheon:MA	11.200	2.250	Nov 2011	1.809	Nov 2012	-		1.809	87.592	102.851	89.401
BMDS Radars Modeling & Simulation (M&S) Legacy Models Support	SS/CPAF	Raytheon MA : Boeing AL	0.962	-		-		-		-	0.000	0.962	0.962
BMDS Radars Modeling & Simulation (M&S) Warfighter Exercises	SS/CPAF	Raytheon:MA	1.596	-		1.600	Nov 2012	-		1.600	4.817	8.013	6.417
Sensors Engineering Sensor Registration	SS/CPAF	Raytheon MA:Torch AL	21.801	-		21.501	Nov 2012	-		21.501	0.000	43.302	4.748
Sensors Engineering Sys Integration & Tech Assessments	SS/CPAF	Raytheon:MA, AL	10.085	1.050	Nov 2011	2.784	Nov 2012	-		2.784	14.317	28.236	14.317
Sensors Engineering Information Assurance AN/ TPY-2 (C-CLS/GMD CCC/ X00047)	SS/CPAF	Raytheon:MA	1.750	-		1.821	Nov 2012	-		1.821	5.180	8.751	8.751
Sensors Engineering Information Assurance SBX (C-CLS/GMD CCC/X00047)	SS/CPAF	Raytheon:MA	0.250	-		0.260	Nov 2012	-		0.260	1.040	1.550	1.550
Sensors Engineering BMD Sensor M&S	SS/CPAF	Raytheon/MA, APL/MD, NGC/VA, NTB:AL	10.006	-		-		-		-	0.000	10.006	10.553
Sensors Engineering BMDS Sensors V&V	SS/CPAF	APL/MD, MIT/MA, Raytheon/MA :AL	3.298	-		-		-		-	0.000	3.298	3.298

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Missile Defense Agency			DATE: February 2012
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
External Sensors External Sensors - Prime	SS/CPAF	NG (RaPID):CO	27.068	-		-		-		-	0.000	27.068	13.148
External Sensors Independent Analysis for ESL	MIPR	NSWC-DD:VA	1.901	-		-		-		-	0.000	1.901	1.103
External Sensors Truth Sources / Advanced Algorithms	MIPR	NASIC (WPAFB):OH	1.350	-		-		-		-	0.000	1.350	0.552
External Sensors ESL Support	SS/CPAF	MDIOC:CO	2.388	-		-		-		-	0.000	2.388	1.324
External Sensors Site 2	MIPR	Site 2:CO	1.103	-		-		-		-	0.000	1.103	1.103
External Sensors Technical Expertise	SS/CPAF	SCITEC STTR:CO	1.249	-		-		-		-	0.000	1.249	0.717
External Sensors Site 15	MIPR	Site 15:CO	0.552	-		-		-		-	0.000	0.552	0.552
External Sensors FFRDC	SS/CPAF	FFRDC:CO	0.815	-		-		-		-	0.000	0.815	0.443
AN/TPY-2 C2BMC Fielding AN/TPY-2 Teleport	MIPR	DISA, SPAWAR:VA	9.822	-		-		-		-	0.000	9.822	7.487
AN/TPY-2 C2BMC Fielding AN/TPY-2 US Comms/ PAAWNS	MIPR	DISA:VA	2.387	-		-		-		-	0.000	2.387	2.387
AN/TPY-2 C2BMC Fielding AN/TPY-2 Comms Fielding	MIPR	DISA:VA	6.806	-		-		-		-	0.000	6.806	3.106
AN/TPY-2 C2BMC Fielding AN/TPY-2 BMDS Deployable Interface Nodes	MIPR	PM DCATS, WIN-T, NRDEC, PMRF:VA, CA	9.123	-		-		-		-	0.000	9.123	9.123
AN/TPY-2 C2BMC Fielding AN/TPY-2 Teleport SATCOM	MIPR	DISA/PM DCATS/ NAVSEA:VA	23.479	-		-		-		-	0.000	23.479	15.669
AN/TPY-2 C2BMC Fielding AN/TPY-2 Comms Modems	MIPR	DISA:VA	4.110	-		-		-		-	0.000	4.110	4.110
Sensors Directorate Operations Govt Salaries, Travel, Training (MDA Sensors)	MIPR	MDA:AL, VA	29.667	15.750	Oct 2011	21.939	Nov 2012	-		21.939	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Missile Defense Agency			DATE: February 2012
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Sensors Directorate Operations MiDAESS, FFRDC/UARC	SS/CPAF	CSS, APL, LL, OGA:AL/ MA/VA/MD	79.137	31.580	Oct 2011	31.232	Nov 2012	-		31.232	Continuing	Continuing	Continuing
Sensors Directorate Operations Other Govt Agencies	MIPR	SMDC/AL, Hanscom AFB:MA	6.867	7.647	Oct 2011	8.897	Nov 2012	-		8.897	Continuing	Continuing	Continuing
Upgrade Clear Early Warning Radar Design Refinement	C/CPAF	Raytheon, Boeing, or Other:MA, AK, AL	-	2.497	Dec 2011	-		-		-	0.000	2.497	8.276
Upgrade Clear Early Warning Radar Radar Upgrade -- Prime Contractor	C/CPAF	Raytheon, Boeing, or Other:MA, AK, AL	-	3.910	Dec 2011	47.420	Dec 2012	-		47.420	115.260	166.590	121.960
Upgrade Clear Early Warning Radar Program Office - OGA	MIPR	USAF:Hanscom AFB, MA	-	1.755	Dec 2011	5.345	Nov 2012	-		5.345	10.422	17.522	13.430
Upgrade Clear Early Warning Radar SPA Upgrade & Processor Rehost	MIPR	USAF:Hanscom AFB, MA	-	1.848	Dec 2011	15.981	Nov 2012	-		15.981	3.741	21.570	6.907
Upgrade Clear Early Warning Radar BCN Upgrades	MIPR	MDA C2BMC / DISA:MA, AK	-	15.600	Dec 2011	9.000	Nov 2012	-		9.000	10.000	34.600	39.479
Upgrade Clear Early Warning Radar DPF Site Activation/ Admin Comms	MIPR	MDA C2BMC:MA, AK	-	1.299	Dec 2011	2.117	Nov 2012	-		2.117	6.316	9.732	9.566
Upgrade Clear Early Warning Radar GMD Fire Control Integration	SS/CPAF	Boeing/AK/AL, Raytheon:MA	-	1.366	Nov 2011	4.300	Nov 2012	-		4.300	12.548	18.214	14.890
Upgrade Clear Early Warning Radar HSV UEWR Test Lab Upgrades & Clear Test Lab Representations	SS/CPAF	Raytheon:MA/AL	-	-		7.500	Nov 2012	-		7.500	15.928	23.428	23.428
AN/TPY-2 Radar Deployment / Site Activation Site Activation & Deployment	SS/CPAF	Raytheon:OCONUS	16.403	14.500	Dec 2011	-		-		-	0.000	30.903	16.382
AN/TPY-2 Radar Deployment / Site Activation DPW Primary Facilities	MIPR	MDA DPW:OCONUS, AL	-	3.293	Dec 2011	-		-		-	3.398	6.691	7.120

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Missile Defense Agency		DATE: February 2012
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Oak Project Oak	MIPR	Various:Various	-	28.002	Nov 2011	31.644	Nov 2012	-		31.644	Continuing	Continuing	Continuing
		Subtotal	487.364	147.844		257.656		-		257.656			

Remarks

Note: Project Oak is described at a higher level of classification.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UEWR (Beale, Fylingdales, Thule) & COBRA DANE Sustainment/Upgrades COBRA DANE Upgrade Sustainment	SS/FFP	Raytheon:MA	13.167	-		-		-		-	0.000	13.167	7.900
UEWR (Beale, Fylingdales, Thule) & COBRA DANE Sustainment/Upgrades UEWR-CD Common Mission Software Sustainment	SS/CPAF	Raytheon:MA	14.976	-		-		-		-	0.000	14.976	7.184
UEWR (Beale, Fylingdales, Thule) & COBRA DANE Sustainment/Upgrades UEWR-CD Program Office Support	MIPR	Hanscom AFB:MA	14.168	-		-		-		-	34.106	48.274	49.202
UEWR (Beale, Fylingdales, Thule) & COBRA DANE Sustainment/Upgrades Thule Sustainment	SS/CPAF	Raytheon:MA	1.000	-		-		-		-	0.000	1.000	1.000
BMDS Radars (Sustainment) AN/TPY-2 #2 CLS (Shariki)	SS/CPAF	Raytheon:MA	27.937	-		-		-		-	164.703	192.640	223.021
BMDS Radars (Sustainment) AN/TPY-2 #3 CLS (Site 512)	SS/CPAF	Raytheon:MA	27.671	-		-		-		-	157.435	185.106	215.003

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Support ($ in Millions)

				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Radars (Sustainment) AN/TPY-2 #4 CLS (PAA)	SS/CPAF	Raytheon:MA	-	-		-		-		-	128.535	128.535	155.452
BMDS Radars (Sustainment) AN/TPY-2 #4 Refurbishment	SS/CPAF	Raytheon:MA	25.200	-		-		-		-	0.000	25.200	12.442
BMDS Radars (Sustainment) AN/TPY-2 #6 CLS (FBM @site TBD)	SS/CPAF	Raytheon:MA	22.530	-		-		-		-	163.851	186.381	220.208
BMDS Radars (Sustainment) AN/TPY-2 #1 CLS (Test Asset)	SS/CPAF	Raytheon:MA	-	-		-		-		-	33.761	33.761	40.642
BMDS Radars (Sustainment) AN/TPY-2 #5 CLS (THAAD)	SS/CPFF	Raytheon:MA	11.523	-		-		-		-	91.347	102.870	116.105
BMDS Radars (Sustainment) AN/TPY-2 #7 CLS (THAAD)	SS/CPAF	Raytheon:MA	11.356	-		-		-		-	85.287	96.643	109.878
BMDS Radars (Sustainment) Army Hybrid Program Office	MIPR	SMDC:AL	2.330	-		-		-		-	7.802	10.132	11.563
BMDS Radars (Sustainment) AN/TPY-2 Radars Operation & Sustainment	SS/CPAF	Raytheon:MA	46.955	-		-		-		-	0.000	46.955	68.301
BMDS Radars (Sustainment) AN/TPY-2 #2 Shariki Site Support	MIPR	US Army:Japan	0.800	-		-		-		-	0.000	0.800	0.800
BMDS Radars (Sustainment) AN/TPY-2 PPU Refurbishment/Retrofit	SS/FPIF	Raytheon:MA	8.800	-		-		-		-	0.000	8.800	8.800
BMDS Radars (Sustainment) AN/TPY-2 Parts International Transportation	MIPR	TACS HDAC Distro:CA	1.779	-		-		-		-	0.000	1.779	1.830
BMDS Radars (Sustainment) AN/TPY-2 Fire Unit Radar Compliance Validation	SS/CPAF	GDIT:AL	0.176	-		-		-		-	0.000	0.176	0.176
BMDS Radars (Sustainment) GBR-P Caretaker	SS/CPAF	Raytheon:CA	1.112	-		-		-		-	0.000	1.112	1.112

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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Radars Communications (Sustainment) AN/TPY-2 Comms Sustainment	SS/CPAF	Lockheed Martin Team, DISA:VA	26.849	-		-		-		-	0.000	26.849	27.683
		Subtotal	258.329	-		-		-		-	866.827	1,125.156	1,278.302

Remarks

For FY 2012 and FY 2013, operations and sustainment of UEWR/CD and AN/TPY-2 Radars (CLS) are O&M appropriations and are described in the MDA O-Docs.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Level Testing AN/ TPY-2 FT & GT	SS/CPAF	Raytheon:MA	46.959	24.715	Dec 2011	-		-		-	163.402	235.076	266.267
BMDS Level Testing UEWR/ CD FT & GT	SS/CPAF	Raytheon/MA, Boeing:AL	15.660	15.500	Dec 2011	-		-		-	62.997	94.157	110.261
BMDS Level Testing Thule Upgrade FT & GT	SS/CPAF	Raytheon/MA, Boeing:AL	6.630	1.120	Dec 2011	-		-		-	4.133	11.883	13.081
BMDS Level Testing SBX FT & GT	SS/CPAF	Raytheon/MA, Boeing:AL	28.075	6.328	Dec 2011	-		-		-	46.715	81.118	85.499
BMDS Level Testing External Sensors Lab FT & GT Support	SS/CPAF	NG/CA, MDIOC:CO	1.248	0.977	Dec 2011	-		-		-	5.106	7.331	7.331
BMDS Level Testing Digital Signal Injection	SS/CPAF	Raytheon:MA	12.898	-		-		-		-	0.000	12.898	12.898
BMDS Level Testing Warfighter Exercises	SS/CPAF	Raytheon:MA	1.317	-		-		-		-	0.000	1.317	1.317
BMDS Level Testing Thule CTTO Infrastructure	SS/CPAF	Boeing:AL	8.781	-		-		-		-	0.000	8.781	8.781
BMDS Level Testing UEWR CTTO Infrastructure	SS/CPAF	Boeing:AL	4.037	-		-		-		-	0.000	4.037	10.537

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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Level Testing X-Band Simulator Tester	SS/CPAF	Raytheon :MA	5.180	-		-		-		-	0.000	5.180	5.180
BMDS Level Testing SBX Infrastructure	SS/CPAF	Raytheon:MA	4.390	-		-		-		-	0.000	4.390	4.390
BMDS Radars Concurrent Test, Training & Operations (CTTO) Infrastructure AN/ TPY-2 SSF/CTTO/RDSIS Upgrade	SS/CPAF	Raytheon:MA	29.860	-		-		-		-	5.587	35.447	39.962
BMDS Radars Concurrent Test, Training & Operations (CTTO) Infrastructure X-Band Simulator Tester (XST)	SS/CPAF	Raytheon:MA	6.000	-		-		-		-	53.761	59.761	59.761
Element Test and Infrastructure TPY-2 SSF Integration & Infrastructure, Sys Test Lab	SS/CPAF	Raytheon:MA	6.368	7.382	Dec 2011	-		-		-	43.228	56.978	57.937
Element Test and Infrastructure UEWR/CD SSF Integration & Infrastructure, Sys Test Lab	SS/CPAF	Boeing/AL:Raytheon/ MA	1.170	4.215	Nov 2011	-		-		-	27.090	32.475	33.022
Element Test and Infrastructure ESL SSF Integration	MIPR	AFSPC:CO	0.646	0.343	Dec 2011	-		-		-	1.709	2.698	2.742
Element Test and Infrastructure SBX SSF Integration & Infrastructure, Sys Test Lab	SS/CPAF	Boeing:AL	6.431	2.660	Dec 2011	-		-		-	11.426	20.517	20.862
Element Test and Infrastructure Thule SSF Integration & Sys Test Lab	SS/CPAF	Boeing:AL	1.500	0.598	Dec 2011	-		-		-	2.473	4.571	4.649
		Subtotal	187.150	63.838		-		-		-	427.627	678.615	744.477

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MD11: *BMDS Radars*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Remarks

N/A

	Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	932.843	211.682		257.656		-		257.656			

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603884C: *Ballistic Missile Defense Sensors*	**PROJECT** MD11: *BMDS Radars*

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603884C: *Ballistic Missile Defense Sensors*	**PROJECT** MD11: *BMDS Radars*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
GMD Intercept Flight Test FTG-06a	1	2011	1	2011
Initiate Development of Advanced Processor Platform (Superdome Obsolescence)	2	2011	2	2011
Aegis Flight Test FTM-15	3	2011	3	2011
Deliver UEWR Simulator Tester (Beale, Fylingdales, Thule)	4	2011	4	2011
Complete AN/TPY-2 Radar #4 Refurbishment	4	2011	4	2011
GMD Intercept Flight Test FTG-06b	4	2012	4	2012
Aegis Flight Test FTM-23	3	2012	3	2012
THAAD Flight Test FTT-13	3	2012	3	2012

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MT11: *BMDS Radars Test*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
MT11: *BMDS Radars Test*	-	-	72.388	-	72.388	85.892	103.909	76.015	84.058	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0		0	0	0	0	0		

Note

The MT11 R-4/4A depicts only test events for which Sensors participation is ``planned``. For a full listing of BMDS test events, see the R-4/4A in the BMDS Test and Evaluation Program Element (0603914C).

A. Mission Description and Budget Item Justification

The Sensors test program for EPAA Phase I Initial integrated Defense supports the Integrated Master Test Plan (IMTP) for Operational Test and Evaluation of theater/ regional defense systems that was fielded at the end of Calendar Year 11 (CY 2011) and supports an Operational Assessment of the GMD weapon system. EPAA Phase I Initial integrated Defense testing (FY 2011-2012) demonstrated Aegis 3.6.1 SM-3 Block IA launch on remote (AN/TPY-2 FB) intercept of an IRBM target (FTM-15), will demonstrate C2BMC management of two AN/TPY-2 Forward-based mode (FBM) radars (GT-04) and will include sensors support for GMD engagement of an IRBM target (FTG-06b), and operational flight test engagements of SRBM and MRBM threats using a regional/theater BMDS architecture (FTO-01).

The Sensors test program for Robust MRBM Defense (FY 2012-2016) supports the IMTP for Operational Test and Evaluation of strategic and regional BMD systems that will be fielded at the end of CY15. Sensors testing includes BMDS Ground Testing (GT-06), a Cobra Dane Tracking Test during a simulated engagement of an IRBM by a ground-based interceptor (GBI) (FTX-10), and sensors support for Aegis 4.0.1 engagement of a Wildcat target (FTX-14/FTM-24), Aegis Ashore intercept of an MRBM using integrated fire control (AN/TPY-2) (AAFTM-01/AAFTM-02), Aegis 5.0 (emulating Aegis Ashore) intercept of an MRBM using launch on remote doctrine (FTM-20 E1), THAAD exoatmospheric engagement of an SRBM (FTT-11a), THAAD endoatmospheric engagement of a MRBM (FTT-15), GM salvo (2) intercept of a single ICBM target (FTG-11), operational flight test engagements of SRBM, MRBM and IRBM threats using a regional/theater BMDS architecture (FTO-02) and operational flight test engagement of an IRBM target with AOs using GMD (FTG-13(OT)).

The Sensors test program for Robust IRBM Defense testing (FY2016-2020) supports the IMTP for Operational Test and Evaluation of the BMDS architecture that will be fielded at the end of Calendar Year 2018 (CY 2018). Testing through FY17 includes BMDS Ground Testing (GT-07), and sensors support for Aegis 5.0 remote engagement (AN/TPY-2 FBM) of an MRBM (FTM-26 E3), THAAD Operational engagement of an IRBM with AOs using remote engagement (Aegis BMD) authorized (FTT-17), THAAD endoatmospheric engagement of a unitary SRBM (FTT-16), GMD operational test engagement of an ICBM with AOs (FTG-13) and GMD engagement of an IRBM using near term discrimination (FTG-15).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Title: BMDS Level Testing	-	-	39.322
Articles:	0	0	0
Description: See Description Below			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MT11: *BMDS Radars Test*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
FY 2011 Accomplishments: FY 2011 accomplishments are found in Budget Project MD11. ***FY 2012 Plans:*** FY 2012 plans are found in Budget Project MD11. ***FY 2013 Plans:*** -Plan and execute sensors participation in the BMDS GTI-04e hardware-in-the-loop (HWIL) and GTD-04e distributed ground tests in accordance with the BMDS Integrated Master Test Plan (IMTP) -Initiate planning for sensors participation in FY 2014 BMDS flight tests FTG-08, FTT-11a, FTX-14, AAFTM-01, FTM-24 and GTX-06 HWIL ground test -Plan for Near-Term Discrimination initial assessments in FY 2014 BMDS flight test FTG-08 and GTX-06 HWIL ground test			
Title: Element Test and Infrastructure ***Articles:*** ***Description:*** See Description Below ***FY 2011 Accomplishments:*** FY 2011 accomplishments are found in Budget Project MD11. ***FY 2012 Plans:*** FY 2012 plans are found in Budget Project MD11. ***FY 2013 Plans:*** -Execute FY 2013 element-level ground test campaign consisting of SNG-26-S (Strong Ionospheric Scintillation data collection), SNG-09-H (X-Band discrimination HWIL assessment) and SNG-39-H (satellite data HWIL / digital reconstruction) to support anchoring M&S for various Critical Engagement Conditions (CEC) and Empirical Measurement Events (EME). -Support evolving SSF (software upgrades) integration into Sensors HWIL Ground Test infrastructure -Configure and maintain sensors HWIL Ground Test Infrastructure to support BMDS Ground Tests	- 0	- 0	33.066 0
Accomplishments/Planned Programs Subtotals	-	-	72.388

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MT11: *BMDS Radars Test*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• 0603881C: *Ballistic Missile Defense Terminal Defense Segment*	420.839	290.076	316.929		316.929	313.212	338.353	249.475	279.758	Continuing	Continuing
• 0603882C: *Ballistic Missile Defense Midcourse Defense Segment*	1,245.489	1,159.456	903.172		903.172	914.603	954.069	948.650	862.884	Continuing	Continuing
• 0603888C: *Ballistic Missile Defense Test & Targets*	999.068	85.569	0.000		0.000	0.000	0.000	0.000	0.000	0.000	1,084.637
• 0603890C: *BMD Enabling Programs*	401.113	415.048	362.711		362.711	339.197	373.346	395.350	394.085	Continuing	Continuing
• 0603891C: *Special Programs - MDA*	228.450	296.145	272.387		272.387	321.450	345.263	354.503	348.602	Continuing	Continuing
• 0603896C: *Ballistic Missile Defense Command and Control, Battle Management & Communication*	454.440	363.640	366.552		366.552	376.116	383.055	358.431	364.725	Continuing	Continuing
• 0603898C: *Ballistic Missile Defense Joint Warfighter Support*	55.351	41.174	55.550		55.550	53.139	53.718	59.291	60.540	Continuing	Continuing
• 0603904C: *Missile Defense Integration & Operations Center (MDIOC)*	83.112	69.249	63.043		63.043	54.299	55.409	54.693	55.844	Continuing	Continuing
• 0603907C: *Sea Based X-Band Radar (SBX)*	151.032	176.831	9.730		9.730	9.725	9.739	9.725	9.728	Continuing	Continuing
• 0603914C: *Ballistic Missile Defense Test*	0.000	487.699	454.400		454.400	420.357	446.542	373.395	421.632	Continuing	Continuing

D. Acquisition Strategy

Test & Evaluation projects use multiple existing development contracts depending on the system(s) involved in the testing.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MT11: *BMDS Radars Test*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Remarks

N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Remarks

N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Level Testing AN/ TPY-2 FT & GT	SS/CPAF	Raytheon:MA	-	-		24.901	Nov 2012	-		24.901	163.402	188.303	259.321
BMDS Level Testing UEWR/ CD FT & GT	SS/CPAF	Raytheon, Boeing:MA/ AL	-	-		13.423	Nov 2012	-		13.423	62.997	76.420	107.580
BMDS Level Testing Thule FT & GT	SS/CPAF	Raytheon, Boeing:MA/ AL	-	-		0.998	Nov 2012	-		0.998	4.133	5.131	12.881
Element Test and Infrastructure TPY-2 SSF Integration & Infrastructure, Sys Test Lab	SS/CPAF	Raytheon:MA	-	-		27.839	Nov 2012	-		27.839	43.228	71.067	57.937
Element Test and Infrastructure UEWR SSF Integration & Infrastructure, Sys Test Lab	SS/CPAF	Boeing, Raytheon:AL/ MA	-	-		4.226	Nov 2012	-		4.226	27.090	31.316	33.022

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Missile Defense Agency			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MT11: *BMDS Radars Test*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Element Test and Infrastructure ESL SSF Integration	MIPR	AFSPC:CO	-	-		0.356	Nov 2012	-		0.356	1.709	2.065	2.742
Element Test and Infrastructure Thule SSF Integration, Sys Test Lab	SS/CPAF	Boeing:AL	-	-		0.645	Nov 2012	-		0.645	2.473	3.118	4.649
		Subtotal	-	-		72.388		-		72.388	305.032	377.420	478.132

Remarks

N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

Remarks

N/A

	Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		72.388		-		72.388	305.032	377.420	478.132

Remarks

NA

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603884C: *Ballistic Missile Defense Sensors*	**PROJECT** MT11: *BMDS Radars Test*

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603884C: *Ballistic Missile Defense Sensors*	**PROJECT** MT11: *BMDS Radars Test*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
BMDS Operational Flight Test FTO-01	3	2013	3	2013
Aegis Flight Test FTM-20E1	3	2014	3	2014
THAAD Flight Test FTT-11a	4	2014	4	2014
Aegis Flight Test FTM-24	4	2014	4	2014
FY 2014 GM Intercept Flight Test	3	2014	3	2014
Aegis Flight Test AA FTM 01	4	2014	4	2014
BMDS Operational Flight Test FTO-2	4	2015	4	2015
FY 2015 GM SALVO Intercept Flight Test	4	2015	4	2015
FY 2016 GM Intercept Flight Test	4	2016	4	2016
THAAD Flight Test FTT-15	2	2017	2	2017
FY 2017 GM Intercept Flight Test	4	2017	4	2017
FTX-10	3	2015	3	2015

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MD40: *Program-Wide Support*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	14.823	10.393	16.968	-	16.968	16.150	17.758	16.875	16.532	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0		0	0	0	0	0		

Note

In FY 2012, Program Wide Support reflects a proportional decrease as a result of decreases to BMD Sensors.

In FY 2013, Program Wide Support reflects a proportional increase as a result of increases to BMD Sensors.

A. Mission Description and Budget Item Justification

Program-Wide Support (PWS) contains non-headquarters management costs in support of MDA functions and activities across the entire Ballistic Missile Defense System (BMDS). Includes Government Civilians, Advisory and Assistance Services, and Federally Funded Research and Development contracts (FFRDC) providing integrity and oversight of the BMDS as well as, supporting MDA in enabling the development and evaluation of technologies that will respond to the changing threat. In addition, includes Global Deployment personnel and support performing deployment site preparation and activation. Other costs included provide facility capabilities for MDA Executing Agent locations (with the exception of Federal Office Building 2 after FY 2011), such as physical and technical security, legal services, travel and agency training, office and equipment leases, rents and utilities, data and unified communications support, supplies and maintenance, logistics and central property management of equipment, and similar operating expenses. Also includes legal settlements, and foreign currency fluctuations on a limited number of foreign contracts. In keeping with congressional intent, PWS is allocated on a pro-rata basis and therefore, fluctuates by year based on the total MDA budget.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Title: Civilian Salaries and Support	14.823	10.393	16.968
Articles:	0	0	0
Description: See Description Below			
FY 2011 Accomplishments: See paragraph A, Mission Description and Budget Item Justification			
FY 2012 Plans: See paragraph A, Mission Description and Budget Item Justification			
FY 2013 Plans: See paragraph A, Mission Description and budget item justification.			
Accomplishments/Planned Programs Subtotals	14.823	10.393	16.968

Exhibit R-2A, RDT&E Project Justification: PB 2013 Missile Defense Agency		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603884C: *Ballistic Missile Defense Sensors*	PROJECT MD40: *Program-Wide Support*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A